EXCHANGING SHARED STRATEGIES ON IMPROVING WATER AVAILABILITY

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California Department of Food and Agriculture
State Water Efficiency and Enhancement Program (SWEEP)

cdfa

SWEEP BACKGROUND

"...to invest in irrigation and water pumping systems that reduce water use, energy use and greenhouse gas emissions."

- **$10 million**: Emergency Drought Legislation Bill - SB 103 signed by Governor Brown on March 1, 2014
- **$10 million:** AB 91 allocated additional funds March 27, 2015
- **$40 million:** Budget Act of 2015, Item 8570-001-3228 (Chapter 321, Statutes of 2015) appropriate funds from the Greenhouse Gas Reduction Fund
- **$7.5 million**: AB1613 (Chapter 370, Statutes 2016)

SWEEP AUTHORITY

Environmental Farming Act of 1995

Division 1, Part 1, Chapter 3, Article 8.5, Sections 560-568, Section 566 (a)

"The department shall establish and oversee an environmental farming program. The program shall provide incentives to farmers whose practices promote the well-being of ecosystems, air quality, and wildlife and their habitat"

PROJECT TYPES

Water conservation

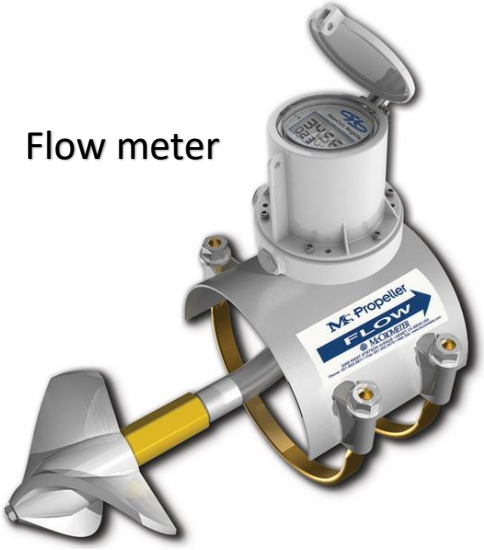
Sensors for Irrigation Scheduling (weather, soil or plant based)

Micro-Irrigation or Drip Systems

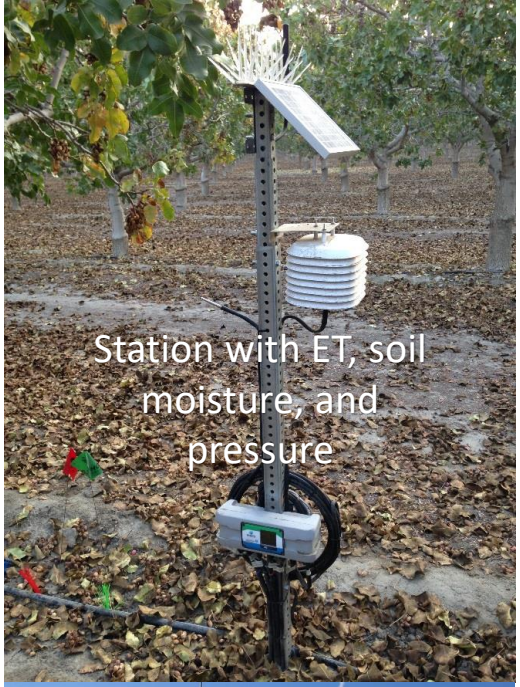
GHG Reductions

Fuel Conversion
Improved Energy Efficiency
Low Pressure Systems
Variable Frequency Drives
Reduced Pumping

Flow meter



Soil Moisture Sensor

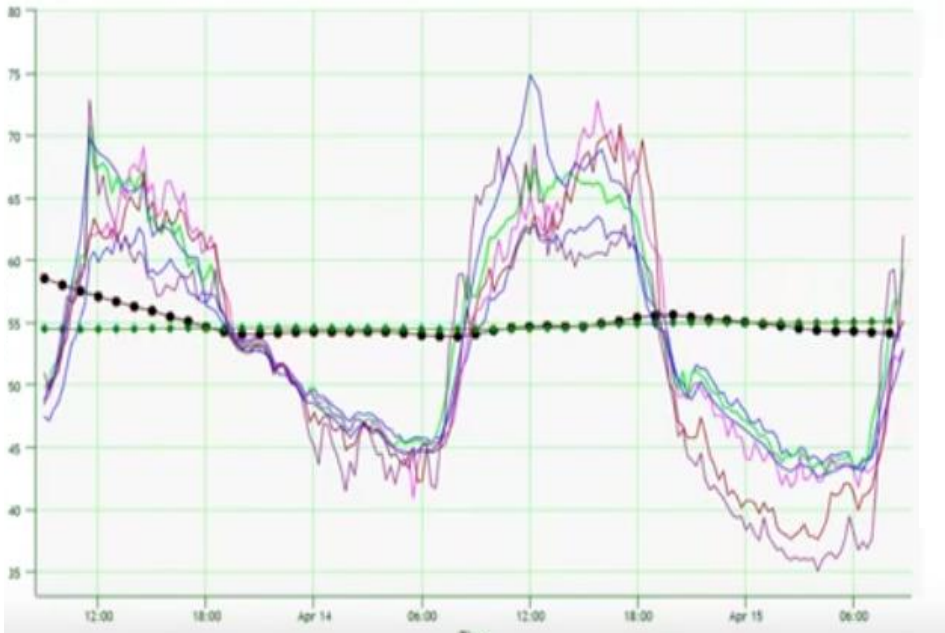


Temperature Sensor

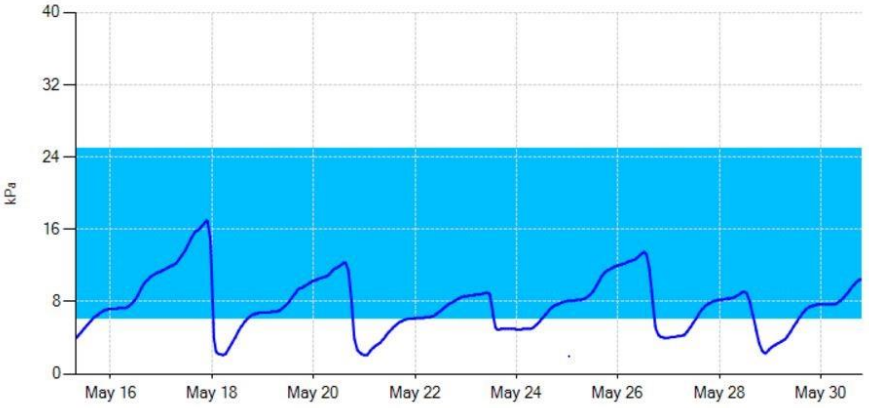
Weather Station

Evapotranspiration Sensor

Air Temperature sensors in SONATERA



Soil Moisture Data



Irrigation methods funded by SWEEP

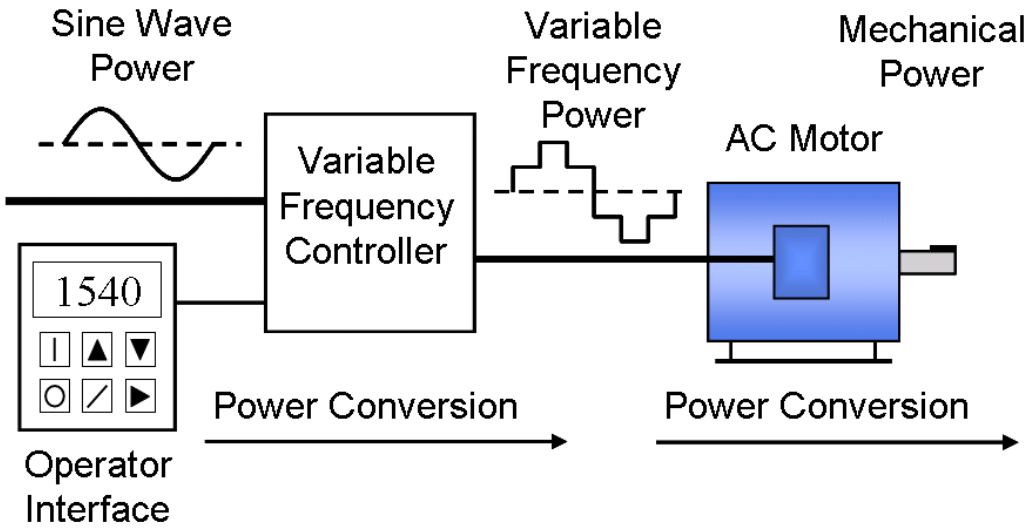

Flood Furrow Irrigation


Solid Set Sprinkler


Drip Irrigation


Micro Sprinkler

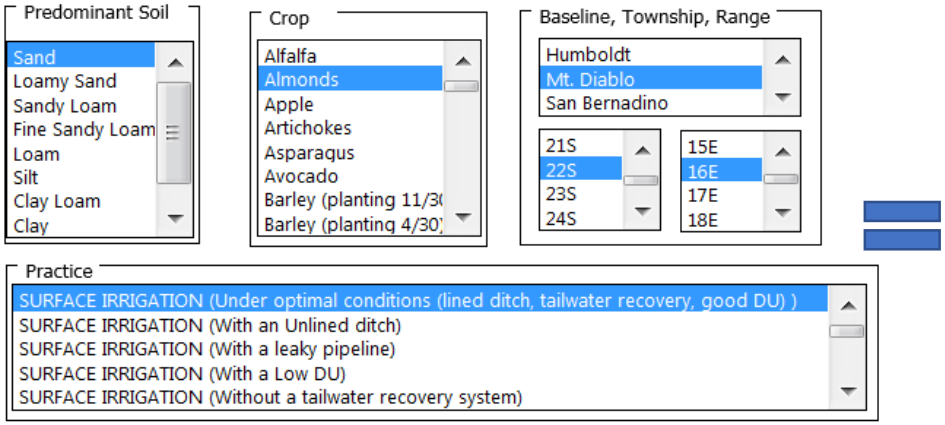
Variable Frequency Drive (VFD)



QUANTIFICATION METHODOLOGY

- Applicants must establish a baseline water use and GHG emissions from the current system and project savings due to the project.

Example: Convert from flood to drip in almonds grown in sandy soil



SWEEP Irrigation Water Savings Assessment Tool

Estimated "Before" Scenario Water Use	81.67 ac-in/ac
Estimated "After" Scenario Water Use	57.65 ac-in/ac
Annual Estimated Water Savings	24.02 ac-in/ac
Percent Water Savings	29.41 %

Supporting documentation is required including:

- Energy bills
- Water Use Calculator Tool
- Pump Tests

→ ARB GHG Calculator Tool

IMPACTS OF SWEEP

587 projects

109,000 acres covered

$61m awarded

$38m matching funds

$99m in economic impact

31 billion gallons of water saved

74,130 metric tons of Co2e

HOW TO IMPROVE WATER AVAILABILITY?

- Adding farm level water efficiencies will result in and increase in regional water availability
- Irrigation/water districts improve water delivery system
- Pressurized pipelines
    - Increases water and energy efficiencies in a region
    - Delivering pressurized water promotes water efficient practices like drip

BUILDING DYNAMIC WATER SOURCING SYSTEMS

- Some irrigation districts model their water delivery for flood irrigation – large delivery all at once

- Drip irrigation uses less water over a longer period
    - Many drip operations rely solely on ground water

- Building an on farm reservoir to store surface water

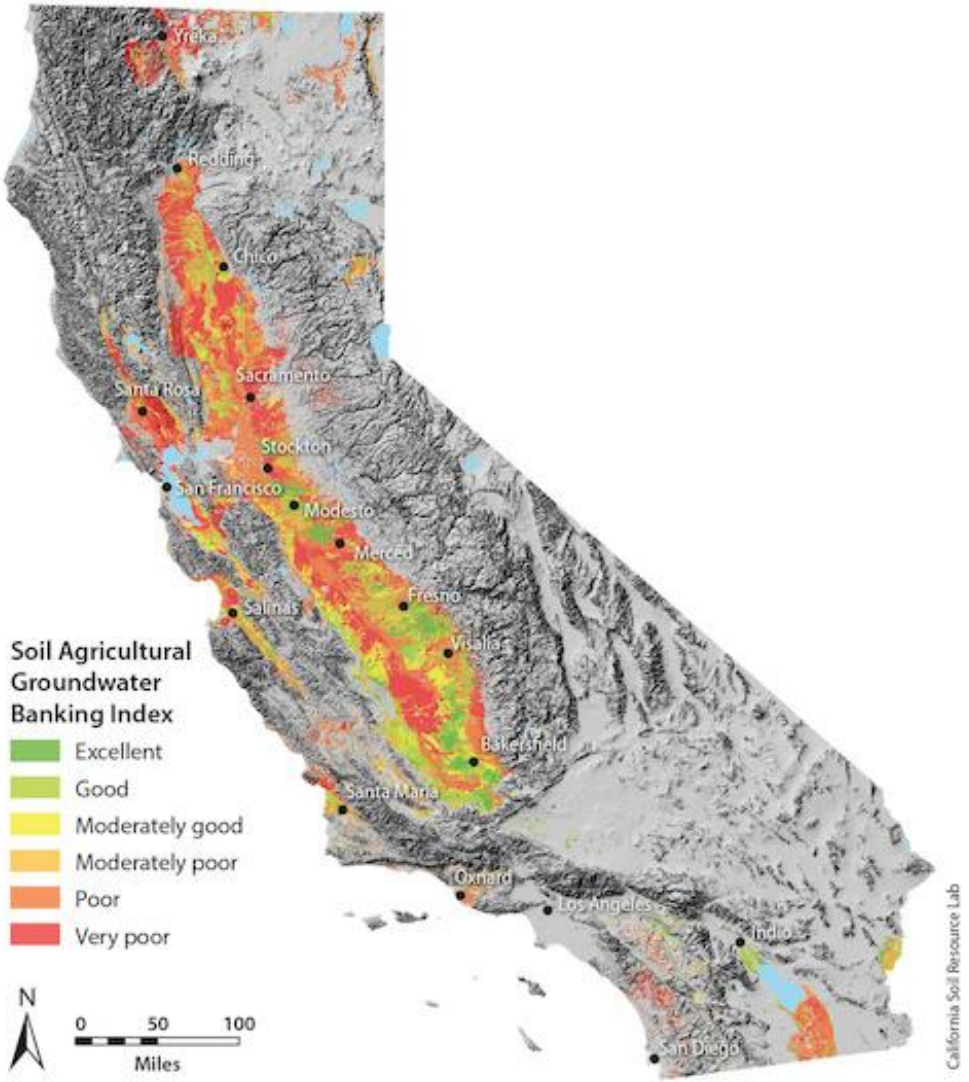
- Use ground water only when surface water is not available

Ground Water Recharge

Ground water can be effectively recharged when water is slowed, placed over a porous surface, and spread out.

Recharge basin

Orchard flooding for recharge



ALTERNATIVE SOURCES OF WATER

- Non-potable recycled water
  - Waste water is treated to standards and use for irrigation
- Desalination
  - Most useful in coastal areas with large populations
- Atmospheric water extraction
  - Currently low water yield

THANK YOU!

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https://www.cdfa.ca.gov/oefi/sweep/